

WHAT IS CLAIMED IS:

1. A hybrid type sensor for detecting high frequency partial discharge of a power device, comprising:

5 a first measurement terminal electrically connected to a measurement point of a power device, which is an inspection object, to receive a power signal to be inspected;

 a second measurement terminal connected to ground to output the power signal to be inspected;

10 a first impedance forming unit disposed between the first and second measurement terminals and implemented to have a low impedance including an inductive reactance component, thus forming a first path that allows a low frequency signal to pass therethrough;

15 a second impedance forming unit disposed between the first and second measurement terminals, connected in parallel with the first impedance forming unit and implemented to have a high impedance including a capacitive reactance component, thus forming a second path that allows a high frequency
20 partial discharge current to pass therethrough;

 a detecting unit connected in series between the second impedance forming unit and the second measurement terminal to convert an amount of the high frequency partial discharge current passing through the second path into measurement
25 signals having a predetermined shape; and

first and second output terminals for outputting positive and negative measurement signals having a predetermined shape detected by the detecting unit, respectively.

5 2. The hybrid type sensor according to claim 1, wherein the first impedance forming unit is implemented as an inductor with a predetermined inductance having both ends connected to the first and second measurement terminals.

10 3. The hybrid type sensor according to claim 1, wherein the second impedance forming unit is implemented as a ceramic capacitor without a lead wire.

4. The hybrid type sensor according to claim 1, wherein
15 the detecting unit is implemented as a chip resistor without a lead wire, the chip resistor being disposed between the second impedance forming unit and the second measurement terminal.

5. The hybrid type sensor according to claim 1, further
20 comprising a dummy inductor disposed between the first and second impedance forming units and the second measurement terminal, thus reducing ground noise.

6. The hybrid type sensor according to claim 3, wherein
25 the ceramic capacitor has a withstanding voltage of 10kV or

higher.

7. A hybrid type sensor for detecting high frequency partial discharge of a power device, comprising:

5 a first measurement terminal electrically connected to a measurement point of a power device, which is an inspection object, to receive a power signal to be inspected;

 a second measurement terminal connected to ground to output the power signal to be inspected;

10 a first impedance forming unit disposed between the first and second measurement terminals and implemented to have a low impedance including an inductive reactance component, thus forming a first path that allows a low frequency signal to pass therethrough;

15 a second impedance forming unit disposed between the first and second measurement terminals, connected in parallel with the first impedance forming unit and implemented to have a high impedance including a capacitive reactance component, thus forming a second path that allows a high frequency
20 partial discharge current to pass therethrough;

 a detecting unit connected in series between the second impedance forming unit and the second measurement terminal to convert an amount of the high frequency partial discharge current passing through the second path into measurement
25 signals having a predetermined shape;

first and second output terminals for outputting positive and negative measurement signals having a predetermined shape detected by the detecting unit, respectively; and

5 a third impedance forming unit disposed between the first and second terminals, connected in parallel with the first and second impedance forming units and implemented to have a high impedance including a capacitive reactance, thus forming a third path that allows a ultra high frequency signal, such as a surge current, to pass therethrough.

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8. The hybrid type sensor according to claim 7, wherein the first impedance forming unit is implemented as an inductor with a predetermined inductance having both ends connected to the first and second measurement terminals.

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9. The hybrid type sensor according to claim 7, wherein the second impedance forming unit is implemented as a ceramic capacitor without a lead wire.

20 10. The hybrid type sensor according to claim 7, wherein the detecting unit is implemented as a chip resistor without a lead wire, the chip resistor being disposed between the second impedance forming unit and the second measurement terminal.

25 11. The hybrid type sensor according to claim 7, further

comprising a dummy inductor disposed between the first and second impedance forming units and the second measurement terminal, thus reducing ground noise.

5 12. The hybrid type sensor according to claim 9, wherein the ceramic capacitor has a withstanding voltage of 10kV or higher.

13. A method of detecting an amount of partial discharge
10 using the sensor for detecting high frequency partial discharge of any of claims 1 to 12, comprising the steps of:

connecting the high frequency partial discharge detecting sensor between an inspection object and ground; and

obtaining the amount of discharge x from an output
15 voltage y output from a detecting unit of the high frequency partial discharge detecting sensor using the following equation:

$$y = 3.4877x + 3.0437$$